

CURRICULUM VITAE

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WORK EXPERIENCE

- 2025-** **Tenure track Assistant Professor**, Principal Investigator of the group Cell Death Biophysics, Biomedical, Metabolic and Neural Sciences Department, University of Modena and Reggio Emilia, Italy
- 2019 - 2024** **Assistant Professor**, Principal Investigator of the group Molecular Cell Biophysics, Biology/Chemistry Department, University of Osnabrück, Germany (renewed in 2022 following positive evaluation).
- 2018 - 2019** **Independent “Eliteprogramm” Fellow** funded by the Baden-Württemberg Stiftung at Interfaculty Institute of Biochemistry, University of Tübingen, Germany (Ana Garcia-Saez Lab)
Topic: “Molecular mechanisms of membrane pore formation in regulated cell death by advanced microscopy”
- 2015 - 2018** **Senior postdoctoral researcher** at Interfaculty Institute of Biochemistry, University of Tübingen, Germany (Ana Garcia-Saez Lab)
Topic: “Quantitative insight in the assembling mechanism of pore-forming proteins during apoptosis by single-molecule techniques”
- 2014 - 2015** **Max-Planck** postdoctoral researcher at Interfaculty Institute of Biochemistry, University of Tübingen, Germany (Ana Garcia-Saez Lab)
Topic: “Assembling mechanism of the pore-forming Bax by single molecule imaging”
- 2013** Postdoctoral researcher at **DKFZ (German Cancer Research Center)**, Heidelberg, Germany (Ana Garcia-Saez Lab)
Topic: “AFM study of the topology and organization of membrane pores induced by Bcl-2 family proteins”
- 2011 - 2012** Postdoctoral researcher at **National Institute of Health and Medical Research**, Marseille, France (Annie Viallat Lab)
Topic: “Establishment of a quantitative assay for DNA damage inside cells”

EDUCATION

- 2007 - 2010** **Ph.D. student** at Department of Chemistry, University of Calabria, Cosenza, Italy (Supervisor: Giuseppe Chidichimo)
Topic: “Study of biomimetic membrane systems and their interaction with low power millimeter waves”
- December 2008** **Admission to the “Abilitazione alla professione di Chimico”**, University of Calabria, Cosenza, Italy. Enabling certificate for work in chemical research in industry

- 2005 - 2007** **Master of Science in Chemistry** at the University of Calabria, Cosenza, Italy
Score: 110/110 cum Laude (appreciated with the **“Best graduate in Chemistry”** prize for the year 2006/2007)
- 2002 - 2005** **Bachelor of Science in Chemistry** at the University of Calabria, Cosenza, Italy
Score: 110/110 cum Laude
- 1997 - 2002** **Licenza scientifica** at the Liceo Scientifico “Pitagora”, Cosenza, Italy
Score: 100/100

HONORS AND AWARDS

- 2023** **National Scientific Habilitation for full professorship in Biochemistry** from Italian Ministry for University and Research
- 2023** **National Scientific Habilitation for associate professorship in Applied Physics** from Italian Ministry for University and Research
- 2022** **Nominee for “Good Teaching Award”** from Osnabrück University and the Hans Mühlenhoff Foundation
- January 2017** **Best poster prize** at the EMBO Workshop “Cell death, Inflammation and Cancer”, Obergurgl, Austria
- 2014 - 2015** **Max-Planck Fellowship** from the Max-Planck Institute for Intelligent Systems, Stuttgart, Germany
- January - May 2013** **DAAD (Deutscher Akademischer Austauschdienst) Fellowship**
- 2007 - 2010** **Ph.D. Fellowship** from the University of Calabria, Italy
- April - June 2009** **Travel grant** at the **Federal Institute of Technology (ETH)**, Zürich, Switzerland, awarded by the Dipartimento Cultura, Istruzione, Università, Ricerca, Innovazione tecnologica, Alta formazione, Regione Calabria, Italy
- 2008** **Best graduate** in Chemistry for the academic years 2006/2007 from the Faculty of Mathematical, Physical and Natural Sciences, University of Calabria, Italy
- 2008** Degree **prize for excellence** (Master), Centro Residenziale, University of Calabria, Italy
- 2003 - 2007** **Undergraduate fellowship**, Centro Residenziale, University of Calabria, Italy
- 2006** **Degree prize for excellence** (Bachelor), Centro Residenziale, University of Calabria, Italy
- 2002 - 2007** **“Fondazione Calabria Scienza Oggi” prize**. Fellowship established with the goal of providing more advanced quality training in science to outstanding students during their bachelor and master studies at University of Calabria, Italy

GRANTS

- 2024-2027** **DFG Project leader** in the GRK 2900, P8
- 2023-2026** **DFG Project leader** in the SFB 1557, TP5
- 2023-2026** **DFG Project leader** in the SFB 1557, Outreach
- 2022-2023** **Baden-Württemberg Stiftung** - Interne Ausschreibung für Kooperationsprojekte
- 2020 - 2022** **DFG Project leader** in the SFB 944, TP26
- 2018 - 2021** Personal grant from the **“Eliteprogramm für Postdocs der Baden-Württemberg Stiftung”** to support early career independency
- 2014 - 2015** Personal grant **from the Institutional Strategy of the University of Tübingen (Deutsche Forschungsgemeinschaft, ZUK 63)** for the promotion of junior researchers

SUPERVISION OF STUDENTS AND POSTDOCTORAL FELLOWS

Last five years 1 Postdoctoral researcher, 3 PhD Students, 15 Master/Diploma Students, 5 Bachelor Students, >20 Master/Bachelor project modules (8 weeks) Students, 4 research assistants

TEACHING EXPERIENCE

2022 - Teaching course for the master program in Biology at Osnabrück University, Germany
“ Signaling in Immunity and Cell Death ”

2019 - Teaching course for the master program in Nanoscience at Osnabrück University, Germany
“Nanobiophysics”

2017 - 2019 Lectures for the European Master module at the École normale supérieure de Lyon, Lyon University, France, **“ Molecular and Supramolecular Machines”**

2016 - 2018 Lectures and practical courses for the Master program at Tübingen University, Germany, **“Characterization of lipid membranes by atomic force microscopy”**

2016 - 2017 Practical course for the Bachelor/Master program at Tübingen University, Germany, **“Science of cooking”**

2008 - 2011 Practical courses at **“Cell model systems”** Summer School, CNR (National research Center) of Tor Vergata, Rome, Italy, contributed to "Preparation of lipid vesicles" laboratory

2008 Tutor at the University of Calabria, Department of Chemistry, Cosenza, Italy
“Elements of Physical Chemistry”

ORGANIZATION OF SCIENTIFIC MEETINGS

2025 **“EWCD: European Workshop on Cell death”**, 11th-16th May 2025 Fiuggi, Italy (Organizer)

2023 **“EWCD: European Workshop on Cell death”**, 4th-9th June 2023 Fiuggi, Italy (Co-organizer)

2021 **“iBiOs Workshop: Getting the Full Picture: Fluorescence Microscopy Across Scales”**, 1st June 2021 Osnabrück, Germany (Organizer)

2015 **“Advanced Microscopy of Membrane Biophysics”**, 7-10 April 2015 Bad Honnef, Germany (Co-organizer)

2008 - 2011 **“Cell model systems”** Summer School 2008-2011, CNR of Tor Vergata, Rome, Italy (Organization support)

INSTITUTIONAL RESPONSABILITIES

From April 2024 **Member of the board**, GRK 2900 “Nanomaterials@biomembranes”, University of Osnabrück, Germany

From January 2023 **Deputy speaker of the SFB 1557**, University of Osnabrück, Germany

2022 - **Member of the Department Biology/Chemistry Council**, University of Osnabrück, Germany

2020 - 2022 **Member of the board**, SFB 944 “Cellular Microcompartments”, University of Osnabrück, Germany

2019 - 2020 **Organizer** of the CellNanOs Internal Seminar Series

COMMISSION OF TRUST

2025- **Member of the editorial board** of The FEBS Journal

2023-2024 **Guest editor** for Frontiers in Immunology

2022-2024 **Guest editor** for International Journal of Molecular Science (IJMS), section “Molecular Biophysics”

2022 -2024	Topic editor for IJMS: “Biochemistry”
2022 -	Member of the German Biophysical Society
2022-	Reviewer for JACS, Communications Physics, BBA, FEBS Journal
2021 -	Reviewer for the Deutsche Forschungsgemeinschaft (DFG)
2021-2022	Guest editor for “Toxins”

CONFERENCES AND WORKSHOPS

Selected oral presentations (last 4 years)

1. “Decoding Gasdermin pore formation at the single-molecule level” Cell Death GRC, 28th July-4th August **2024**, Newry, Maine, United States - United States of America (*invited speaker*).
2. “Structure and regulation of GSDMD pores at the plasma membrane of pyroptotic cells” Death in the Alps and TRR353 workshop on cell death decisions, 7-11 January **2024**, Obergurgl, Austria (*invited speaker*).
3. “Plasticity of GSDMD pores for the control of pyroptotic cell death” Cell Physisc 2023, 10th-13th October **2023**, Saarbrücken, Germany (*invited speaker*).
4. “Molecular mechanisms of inflammatory cell death”, 12th Swiss apoptosis and autophagy meeting, 7th- 8th September **2023** Bern, Switzerland (*invited speaker*).
5. “Biophysical approaches to membrane permeabilization in cell death”, 12th Swiss apoptosis and autophagy meeting, 7th- 8th September **2023** Bern, Switzerland (*invited speaker*).
6. “Membrane permeabilization in pyroptosis”, EWCD: European Workshop on Cell death, 4th-9th June **2023** Fiuggi, Italy.
7. “A Biophysical approach to cell death”, 10th LSC meeting, 3rd-4th March **2023**, Potsdam, Germany (*invited speaker*).
8. “Membrane pores in cell death”, SMALP meeting, 8th December **2022**, online (*invited speaker*).
9. “Membrane permeabilization in regulated cell death at the single molecule level”, German Biophysical Society Meeting, 25-28 September **2022**, Konstanz, Germany.
10. "From assembly to structure: how membrane pores execute regulated cell death", HALOmem International Meeting, 15-16 September **2022**, Halle, Germany (*invited speaker*).
11. “BAX and BAK: distinct inter-players in the growth dynamic of the apoptotic pore”, EWCD 2022, 26 June-1 July **2022**, Fiuggi, Italy.
12. “Membrane pores at the nanoscale during regulated cell death”, DGfB – Membrane Biophysics Meeting **2022**, 23-25 May 2022, Drübeck, Germany.
13. “Mechanisms of GSDMD pore formation at the nanoscale”, Cell death Symposium 2022, 15-19 January **2022**, Obergurgl, Austria (*Invited speaker*).
14. “Dissecting the molecular mechanisms of GSDMD pore formation”, SFB symposium 2021, 21-23 September **2021**, Osnabrück, Germany (*Invited speaker*).
15. “Single molecule imaging of membrane proteins”, FOR2036 Symposium 2020, 12-16 January **2020**, Obergurgl, Austria (*Invited speaker*).

MAJOR CURRENT SCIENTIFIC COLLABORATIONS

- Dr. John Danial, University Cambridge, **UK**
- Prof. Dr. Ana Garcia-Saez, University Köln, **Germany**
- Prof. Dr. Matthias Gehringer, University Tübingen, **Germany**
- Prof. Dr. Ralf Jungmann, MPI and University Munich, **Germany**
- Prof. Gerhard Hummer, MPI Frankfurt, **Germany**
- Prof. Christian Eggeling, Jena University, **Germany**
- Prof. Walter Nickel, Heidelberg University, **Germany**
- Dr. Nieves Peltzer, University Köln, **Germany**
- Prof. Antti Poso, University Eastern Finland, **Finland**

- Prof. Vijay Rathinam, UConn Health, University of Connecticut, **USA**

LANGUAGE SKILLS

MOTHER TONGUE	ITALIAN
OTHER LANGUAGES	ENGLISH Excellent (level C1*)
	FRENCH Intermediate (level A2-B1*)
	GERMAN Intermediate (level B1*)
	(*)Common European Framework of Reference (CEFR) level.

PUBLICATIONS

(* equal contribution; ¹Co-corresponding)

1. Wright SS, Kumari P, Wang C, Fraile-Ágreda V, Kappelhoff S, Margheritis EG, Vasudevan SO, Kailasan Vanaja S, **Cosentino K**, Ruan J, & Rathinam VA (2024). Vesicular translocation of gasdermin pores propagates pyroptosis, *Cell*, accepted.
2. Margheritis E, Kappelhoff S, Danial J, Gehle N, Kohl W, Kurre R, Gonzalez-Montoro A & **Cosentino K** (2024) Gasdermin D cysteine residues synergistically control its palmitoylation-mediated membrane targeting and assembly. *The EMBO Journal*;0:1-24.
3. Kappelhoff S, Margheritis EG & **Cosentino K** (2024) New insights into GSDMD pore formation. *Biochemical Society Transactions* 52:681-92.
4. Barisch C¹, Holthuis JCM¹, & **Cosentino K**¹ (2023) Membrane damage and repair: a thin line between life and death. *Biological Chemistry* 10.1515/hsz-2022-0321.
5. Margheritis E, Kappelhoff S, & **Cosentino K** (2023) Pore-Forming Proteins: From Pore Assembly to Structure by Quantitative Single-Molecule Imaging. *IJMS* 24, 4528.
6. Danial JSH¹, Jenner A, Garcia-Saez AJ¹, & **Cosentino K**¹ (2023). Real-Time Growth Kinetics Analysis of Macromolecular Assemblies in Cells with Single Molecule Resolution. *The Journal of Physical Chemistry A* 10.1021/acs.jpca.3c00368.
7. Galic M, Ungermann C, & **Cosentino K** (2023) Highlight: on the past and the future of cellular microcompartments. *Biological Chemistry* 404, 377-378. doi:10.1515/hsz-2023-0153.
8. Chumpen Ramirez S, Gómez-Sánchez R, Verlhac P, Hardenberg R, Margheritis E, **Cosentino K**, Reggiori F & Ungermann C (2022) Atg9 interactions via its transmembrane domains are required for phagophore expansion during autophagy. *Autophagy* DOI: 10.1080/15548627.2022.2136340
9. **Cosentino K**^{*}, Hertlein V^{*}, Jenner A^{*}, Dellmann T, Gojkovic M, Peña-Blanco A, Dadsena S, Wajngarten N, Danial JSH, Thevathasan JV, Mund M, Ries J, & Garcia-Saez AJ (2022) The interplay between BAX and BAK tunes apoptotic pore growth to control mitochondrial-DNA-mediated inflammation. *Molecular Cell* 82, 933-949.e939.
10. Danial JSH^{*1}, Quintana Y^{*}, Ros U, Shalaby R, Margheritis EG, Chumpen Ramirez S, Ungermann C, Garcia-Saez AJ¹, & **Cosentino K**¹ (2022) Systematic Assessment of the Accuracy of Subunit Counting in Biomolecular Complexes Using Automated Single-Molecule Brightness Analysis. *The Journal of Physical Chemistry Letters* 13(3):822-829.
11. **Cosentino K**, Hermann E, von Kügelgen N, Unsay JD, Ros U, & García-Saez AJ (2021) Force Mapping Study of Actinoporin Effect in Membranes Presenting Phase Domains. *Toxins* 13(9):669.
12. Voskoboynikova N, Margheritis EG, Kodde F, Rademacher M, Schowe M, Budke-Gieseking A, Psathaki O-E, Steinhoff H-J¹, & **Cosentino K**¹ (2021) Evaluation of DIBMA nanoparticles of variable size and anionic lipid content as tools for the structural and functional study of membrane proteins. *Biochimica et Biophysica Acta (BBA) - Biomembranes* 1863(6):183588.

13. Voskoboynikova N, Orekhov P, Bozdaganyan M, Kodde F, Rademacher M, Schowe M, Budke-Giesecking A, Brickwedde B, Psathaki O-E, Mulikidjanian AY, **Cosentino K**, Shaitan KV, & Steinhoff H-J (2021) Lipid Dynamics in Diisobutylene-Maleic Acid (DIBMA) Lipid Particles in Presence of Sensory Rhodopsin II. *International Journal of Molecular Sciences* 22(5):2548.
14. Danial JSH, Shalaby R, **Cosentino K**, Mahmoud MM, Medhat F, Klenerman D, & Garcia Saez AJ (2021) DeepSinse: deep learning-based detection of single molecules. *Bioinformatics*.
15. Jenner A*, Shalaby R*, & **Cosentino K** (2020) Chapter Three - Quantitative single-molecule imaging of protein assembly in membranes. *Advances in Biomembranes and Lipid Self-Assembly*, eds Iglíč A, Rappolt M, & García-Sáez AJ (Academic Press), Vol 31, pp 81-128.
16. Kuwana T, King LE, **Cosentino K**, Suess J, Garcia-Saez AJ, Gilmore AP, & Newmeyer DD (2020) Mitochondrial residence of the apoptosis inducer BAX is more important than BAX oligomerization in promoting membrane permeabilization. *Journal of Biological Chemistry* 295(6):1623-1636.
17. Dimou E, **Cosentino K**, Platonova E, Ros U, Sadeghi M, Kashyap P, Katsinelos T, Wegehingel S, Noé F, García-Sáez AJ, Ewers H, & Nickel W (2019) Single event visualization of unconventional secretion of FGF2. *The Journal of Cell Biology* 218(2):683-699.
18. Flores-Romero H, Landeta O, Ugarte-Urbe B, **Cosentino K**, García-Porras M, García-Sáez AJ, & Basañez G (2019) BFL1 modulates apoptosis at the membrane level through a bifunctional and multimodal mechanism showing key differences with BCLXL. *Cell Death & Differentiation* 26(10):1880-1894.
19. **Cosentino K** & García-Sáez AJ (2018) MIM through MOM: the awakening of Bax and Bak pores. *The EMBO Journal* 37(17).
20. Fasanella A, **Cosentino K**, Beneduci A, Chidichimo G, Cazzanelli E, Barberi RC, & Castriota M (2018) Thermal structural evolutions of DMPC-water biomimetic systems investigated by Raman Spectroscopy. *Biochimica et Biophysica Acta (BBA) - Biomembranes* 1860(6):1253-1258.
21. **Cosentino K** & García-Sáez AJ (2017) Bax and Bak Pores: Are We Closing the Circle? *Trends in Cell Biology* 27(4):266-275.
22. Unsay JD*, **Cosentino K***, Sporbeck K, & García-Sáez AJ (2017) Pro-apoptotic cBid and Bax exhibit distinct membrane remodeling activities: An AFM study. *Biochimica et Biophysica Acta (BBA) - Biomembranes* 1859(1):17-27.
23. Salvador-Gallego R, Mund M, **Cosentino K**, Schneider J, Unsay J, Schraermeyer U, Engelhardt J, Ries J, & García-Sáez AJ (2016) Bax assembly into rings and arcs in apoptotic mitochondria is linked to membrane pores. *The EMBO Journal* 35(4):389-401.
24. **Cosentino K***, Ros U*, & García-Sáez AJ (2016) Assembling the puzzle: Oligomerization of α -pore forming proteins in membranes. *Biochimica et Biophysica Acta (BBA) - Biomembranes* 1858(3):457-466.
25. Subburaj Y*, **Cosentino K***, Axmann M, Pedrueza-Villalmanzo E, Hermann E, Bleicken S, Spatz J, & García-Sáez AJ (2015) Bax monomers form dimer units in the membrane that further self-assemble into multiple oligomeric species. *Nature Communications* 6(1):8042.
26. Unsay JD, **Cosentino K**, & Garcia-Saez AJ (2015) Atomic Force Microscopy Imaging and Force Spectroscopy of Supported Lipid Bilayers. *JoVE* (101):e52867.
27. **Cosentino K**, Bleicken S, & García-Sáez AJ (2015) Analysis of Membrane-Protein Complexes by Single-Molecule Methods. *Pumps, Channels, and Transporters*, eds Clarke RJ & Khalid MAA (Wiley), pp 269-297.
28. **Cosentino K** & García-Sáez AJ (2014) Mitochondrial alterations in apoptosis. *Chemistry and Physics of Lipids* 181(0):62-75.
29. Beneduci A, **Cosentino K**, Romeo S, Massa R, & Chidichimo G (2014) Effect of millimetre waves on phosphatidylcholine membrane models: a non-thermal mechanism of interaction. *Soft Matter* 10(30):5559-5567.

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30. **Cosentino K**¹, Beneduci A, Ramundo-Orlando A, & Chidichimo G (2013) The influence of millimeter waves on the physical properties of large and giant unilamellar vesicles. *Journal of Biological Physics* 39(3):395-410.
31. Unsay JD, **Cosentino K**, Subburaj Y, & García-Sáez AJ (2013) Cardiolipin Effects on Membrane Structure and Dynamics. *Langmuir* 29(51):15878-15887.
32. Beneduci A, **Cosentino K**, & Chidichimo G (2013) Millimeter Wave Radiations Affect Membrane Hydration in Phosphatidylcholine Vesicles. *Materials (Basel)* 6(7):2701-2712.
33. Beneduci A, Filippelli L, **Cosentino K**, Calabrese ML, Massa R, & Chidichimo G (2012) Microwave induced shift of the main phase transition in phosphatidylcholine membranes. *Bioelectrochemistry (Amsterdam, Netherlands)* 84:18-24.
34. Walde P, **Cosentino K**, Engel H, & Stano P (2010) Giant vesicles: preparations an applications. *Chembiochem : a European journal of chemical biology* 11(7):848-865.

Patents

1. **Cosentino K**, De Meo M, Combet-Blanc Y and Viallat A “DNA capsules: an internal standard for assays using micro-electrophoresis”, EP13305653.1, filed on May 21th, 2013.